



55862-CIP

[Sequence Listing]

<110> Takeda Chemical Industries, Ltd.

<120> Novel G protein-coupled receptor protein, its DNA and ligand thereof

<130> 2568US0P-CIP

<150> US 09/831,758
<151> 2001-05-11

<150> PCT/JP99/06283
<151> 1999-11-11

<150> JP 10-323759
<151> 1998-11-13

<150> JP 11-060030
<151> 1999-03-08

<150> JP 11-106812
<151> 1999-04-14

<150> JP 11-166672
<151> 1999-06-14

<150> JP 11-221640
<151> 1999-08-04

<150> JP 11-259818
<151> 1999-09-14

<160> 66

<210> 1
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<212> PRT
<213> Human

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20 25 30
Ser Asn Leu His Ser Lys Glu Asn Tyr Asp Lys Tyr Ser Glu Pro Arg
35 40 45
Gly Tyr Pro Lys Gly Glu Arg Ser Leu Asn Phe Glu Glu Leu Lys Asp
50 55 60
Trp Gly Pro Lys Asn Val Ile Lys Met Ser Thr Pro Ala Val Asn Lys
65 70 75 80
Met Pro His Ser Phe Ala Asn Leu Pro Leu Arg Phe Gly Arg Asn Val
85 90 95
Gln Glu Glu Arg Ser Ala Gly Ala Thr Ala Asn Leu Pro Leu Arg Ser
100 105 110
Gly Arg Asn Met Glu Val Ser Leu Val Arg Arg Val Pro Asn Leu Pro
115 120 125
Gln Arg Phe Gly Arg Thr Thr Ala Lys Ser Val Cys Arg Met Leu
130 135 140
Ser Asp Leu Cys Gln Gly Ser Met His Ser Pro Cys Ala Asn Asp Leu
145 150 155 160
Phe Tyr Ser Met Thr Cys Gln His Gln Glu Ile Gln Asn Pro Asp Gln
165 170 175
Lys Gln Ser Arg
180

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<211> 540
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<213> Human

<400> 2

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acatcaaaca	ttttttgtc	gtgatgtcca	atcttcacag	120
tatgacaaat	attctgagcc	ccaaaagggg	aaagaagcct	180
gaattaaaag	attggggacc	aaaaaatgtt	caattttgag	240
atgccacact	ccttcgccaa	tttgcatttgc	attaaagatga	300
atgcgtggag	caacagccaa	tttgcctctg	gtacacctgc	360
gtgagacgtg	ttcctaacct	tttgcgttgc	agatctggaa	420
tgcaggatgc	tgagtgattt	tttgcgttgc	agaaatatggaa	480
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		ccgatcaaaa	acagtcagg	

<210> 3

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 3

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<210> 4

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 4

ctagaccacc tctatataac tgcccat

27

<210> 5

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 5

gcacatagag acttaatttt agattttagac

30

<210> 6

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 6

catgcacttt gactggtttc caggtat

27

<210> 7

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 7

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27

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<211> 196
<212> PRT
<213> Human

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Ser Ser Leu Leu Thr Ser Asn Ile Phe Cys Ala Asp Glu Leu Val Met
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Ser Asn Leu His Ser Lys Glu Asn Tyr Asp Lys Tyr Ser Glu Pro Arg
35 40 45
Gly Tyr Pro Lys Gly Glu Arg Ser Leu Asn Phe Glu Glu Leu Lys Asp
50 55 60
Trp Gly Pro Lys Asn Val Ile Lys Met Ser Thr Pro Ala Val Asn Lys
65 70 75 80
Met Pro His Ser Phe Ala Asn Leu Pro Leu Arg Phe Gly Arg Asn Val
85 90 95
Gln Glu Glu Arg Ser Ala Gly Ala Thr Ala Asn Leu Pro Leu Arg Ser
100 105 110
Gly Arg Asn Met Glu Val Ser Leu Val Arg Arg Val Pro Asn Leu Pro
115 120 125
Gln Arg Phe Gly Arg Thr Thr Ala Lys Ser Val Cys Arg Met Leu
130 135 140
Ser Asp Leu Cys Gln Gly Ser Met His Ser Pro Cys Ala Asn Asp Leu
145 150 155 160
Phe Tyr Ser Met Thr Cys Gln His Gln Glu Ile Gln Asn Pro Asp Gln
165 170 175
Lys Gln Ser Arg Arg Leu Leu Phe Lys Lys Ile Asp Asp Ala Glu Leu
180 185 190
Lys Gln Glu Lys
195

<210> 9
<211> 588
<212> DNA
<213> Human

<400> 9
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tatgacaatattctgagcc tagaggataccaaaagggg aaagaagcct caattttgag 180
gaattaaaaatggggacc aaaaaatgtt attaagatga gtacacctgc agtcaataaa 240
atgccacact cttcgccaa cttggcatttgggaa ggaacgttca agaagaaaa 300
agtgcggag caacagccaa cctgcctctg agatctggaa gaaatatggaa ggtgagcc 360
gtgagacgtg ttcctaacct gccccaaagg tttgggagaa caacaacagc caaaagtgtc 420
tgcaggatgc tgagtgatt gtgtcaagga tccatgcatt caccatgtgc caatgactta 480
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agactgctat tcaagaaaaat agatgatgca gaattgaaac aagaaaaaa 588

<210> 10
<211> 27
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<213> Artificial Sequence

<220>
<223> primer

<400> 10
gccttagagga gatctaggct gggagga 27

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<211> 27
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<220>
<223> primer

<400> 11
 gggaggaaca tggaagaaga aaggagc 27

<210> 12
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 12
 gatggtaat gcatggactg ctggagc 27

<210> 13
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 13
 ttcctccaa atctcagtgg caggttg 27

<210> 14
<211> 196
<212> PRT
<213> Bovine

<400> 14
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 20 25 30
 Pro Asn Leu Tyr Ser Lys Lys Asn Tyr Asp Lys Tyr Ser Glu Pro Arg
 35 40 45
 Gly Asp Leu Gly Trp Glu Lys Glu Arg Ser Leu Thr Phe Glu Glu Val
 50 55 60
 Lys Asp Trp Ala Pro Lys Ile Lys Met Asn Lys Pro Val Val Asn Lys
 65 70 75 80
 Met Pro Pro Ser Ala Ala Asn Leu Pro Leu Arg Phe Gly Arg Asn Met
 85 90 95
 Glu Glu Glu Arg Ser Thr Arg Ala Met Ala His Leu Pro Leu Arg Leu
 100 105 110
 Gly Lys Asn Arg Glu Asp Ser Leu Ser Arg Trp Val Pro Asn Leu Pro
 115 120 125
 Gln Arg Phe Gly Arg Thr Thr Ala Lys Ser Ile Thr Lys Thr Leu
 130 135 140
 Ser Asn Leu Leu Gln Gln Ser Met His Ser Pro Ser Thr Asn Gly Leu
 145 150 155 160
 Leu Tyr Ser Met Ala Cys Gln Pro Gln Glu Ile Gln Asn Pro Gly Gln
 165 170 175
 Lys Asn Leu Arg Arg Arg Gly Phe Gln Lys Ile Asp Asp Ala Glu Leu
 180 185 190
 Lys Gln Glu Lys
 195

<210> 15
<211> 588
<212> DNA
<213> Bovine

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 acatcaaaca tcttctgcac agacgaatca aggatgccca atctttacag caaaaagaat 120
 tatgacaaat attccgagcc tagaggagat ctaggctggg agaaagaaag aagtcttact 180

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atgccacct	ctgcagccaa	cctgccactg	agatttggga	ggaacatgga	agaagaaagg	300
agcactaggg	cgatggccca	cctgcctctg	agactcgaa	aaaatagaga	ggacagcctc	360
tccagatggg	tcccaaatct	gccccagagg	tttggaaagaa	caacaacagc	caaaagcatt	420
accaagaccc	ttagtaattt	gctccagcag	tccatgcatt	caccatctac	aatgggcta	480
ctctactcca	tggcctgcca	gccccaaagaa	atccagaatc	ctggtaaaaa	gaacctaaagg	540
agacggggat	tccagaaaat	agatgatgca	gaattgaaac	aagaaaaaa		588

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<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 16
ccctgggct tcttctgtct tctatgt

27

<210> 17
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 17
agcgattcat tttattgact ttagca

26

<210> 18
<211> 203
<212> PRT
<213> Rat

<400> 18
Met Glu Ile Ile Ser Ser Lys Arg Phe Ile Leu Leu Thr Leu Ala Thr
1 5 10 15
Ser Ser Phe Leu Thr Ser Asn Thr Leu Cys Ser Asp Glu Leu Met Met
20 25 30
Pro His Phe His Ser Lys Glu Gly Tyr Gly Lys Tyr Tyr Gln Leu Arg
35 40 45
Gly Ile Pro Lys Gly Val Lys Glu Arg Ser Val Thr Phe Gln Glu Leu
50 55 60
Lys Asp Trp Gly Ala Lys Lys Asp Ile Lys Met Ser Pro Ala Pro Ala
65 70 75 80
Asn Lys Val Pro His Ser Ala Ala Asn Leu Pro Leu Arg Phe Gly Arg
85 90 95
Asn Ile Glu Asp Arg Arg Ser Pro Arg Ala Arg Ala Asn Met Glu Ala
100 105 110
Gly Thr Met Ser His Phe Pro Ser Leu Pro Gln Arg Phe Gly Arg Thr
115 120 125
Thr Ala Arg Arg Ile Thr Lys Thr Leu Ala Gly Leu Pro Gln Lys Ser
130 135 140
Leu His Ser Leu Ala Ser Ser Glu Ser Leu Tyr Ala Met Thr Arg Gln
145 150 155 160
His Gln Glu Ile Gln Ser Pro Gly Gln Glu Gln Pro Arg Lys Arg Val
165 170 175
Phe Thr Glu Thr Asp Asp Ala Glu Arg Lys Gln Glu Lys Ile Gly Asn
180 185 190
Leu Gln Pro Val Leu Gln Gly Ala Met Lys Leu
195 200

<210> 19
<211> 609
<212> DNA
<213> Rat

<400> 19
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acttcaaaca ccctttgttc agatgaatta atgatgcccc attttcacag caaagaaggt 120
tatggaaaat attaccagct gagaggaatc caaaagggg taaaggaaag aagtgtcaact 180
tttcaagaac tcaaagatgg gggggcaaaag aaagatatta agatgagtcc agcccctgcc 240
aacaaagtgc cccactcagc agccaacacctt cccctgaggt ttgggaggaa catagaagac 300
agaagaagcc ccaggccacg ggccaaacatg gaggcaggga ccatgagccca ttttcccagc 360
ctgccccaaa gtggggggag aacaacagcc agacgcata ccaagacact ggctggttg 420
ccccagaaat ccctgcactc cctggcctcc agtgaatcgc tctatgcccata gacccggccag 480
catcaagaaa ttccatcgatcc tggcaagag caaccttagga aacgggtgtt cacggaaaca 540
gatgtatgcag aaaggaaaca agaaaaata ggaaacctcc agccagtcct tcaaggggct 600
atgaagctg 609

<210> 20
<211> 12
<212> DNA
<213> Artificial Sequence

<220>
<223> base sequence encoding RFGR sequence

<220>
<221> variation
<222> 3
<223> n means any of a, g, t or c.

<220>
<221> variation
<222> 9
<223> n means any of a, g, t or c.

<400> 20
mgnnttyggna ar 12

<210> 21
<211> 12
<212> DNA
<213> Artificial Sequence

<220>
<223> base sequence encoding RSGK sequence

<220>
<221> variation
<222> 3
<223> n means any of a, g, t or c.

<220>
<221> variation
<222> 9
<223> n means any of a, g, t or c.

<220>
<221> variation
<222> 12
<223> n means any of a, g, t or c.

<400> 21
mgnnttyggnm gn 12

<210> 22
<211> 12
<212> DNA
<213> Artificial Sequence

<220>
<223> base sequence encoding RSGR sequence

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<223> n means any of a, g, t or c.

<220>
<221> variation
<222> 6
<223> n means any of a, g, t or c.

<220>
<221> variation
<222> 9
<223> n means any of a, g, t or c.

<400> 22
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<210> 23
<211> 12
<212> DNA
<213> Artificial Sequence

<220>
<223> base sequence encoding RLGK sequence

<220>
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<222> 3
<223> n means any of a, g, t or c.

<220>
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<222> 6
<223> n means any of a, g, t or c.

<220>
<221> variation
<222> 9
<223> n means any of a, g, t or c.

<220>
<221> variation
<222> 12
<223> n means any of a, g, t or c.

<400> 23
mgnwsnggnm gn

12

<210> 24
<211> 12
<212> DNA
<213> Artificial Sequence

<220>
<223> base sequence encoding RLGK sequence

<220>
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<223> n means any of a, g, t or c.

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<220>

<221> variation		
<222> 9		
<223> n means any of a, g, t or c.		
<400> 24		
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<211> 12		
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<223> base sequence encoding RLGR sequence		
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<223> n means any of a, g, t or c.		
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<222> 6		
<223> n means any of a, g, t or c.		
<220>		
<221> variation		
<222> 9		
<223> n means any of a, g, t or c.		
<220>		
<221> variation		
<222> 12		
<223> n means any of a, g, t or c.		
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<212> DNA		
<213> Artificial Sequence		
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<223> primer		
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<210> 27		
<211> 25		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> primer		
<400> 27		
ttctccaaaa cctttggggc aggtt	25	
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<211> 28		
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<210> 30 <211> 28 <212> DNA <213> Artificial Sequence	
<220> <223> primer	
<400> 30 gtgctgcggg gcttcttttc tcatctat	28
<210> 31 <211> 21 <212> DNA <213> Artificial Sequence	
<220> <223> primer	
<400> 31 tttagactta gacgaaatgg a	21
<210> 32 <211> 21 <212> DNA <213> Artificial Sequence	
<220> <223> primer	
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115	120	125
Thr Ala Arg Ser Pro Lys Thr Pro Ala Asp Leu Pro Gln Lys Pro Leu		
130	135	140
His Ser Leu Gly Ser Ser Glu Leu Leu Tyr Val Met Ile Cys Gln His		
145	150	155
Gln Glu Ile Gln Ser Pro Gly Gly Lys Arg Thr Arg Arg Gly Ala Phe		160
165	170	175
Val Glu Thr Asp Asp Ala Glu Arg Lys Pro Glu Lys		
180	185	

<210> 34

<211> 564

<212> DNA

<213> Mouse

<400> 34

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gacggaaaat actcccgact gagaggaatc caaaaaggggg aaaaggaaag aagtgtcagt	180
tttcaagaac taaaagattt gggggcaaag aatgttattt agatgagtcc agccctgtcc	240
aacaaggatc cccactcagc agccaacctg cccctgagat ttgaaaggac catagatgag	300
aaaagaagcc ccgcagcact ggtcaacatg gaggcagggc ccaggagcca ttccccagc	360
ctgccccaaa gtttgggag aacaacagcc agaagcccc agacacccgc tgatttgcca	420
cagaaacccc tgcactcaact gggctccagc gagttgcctt acgtcatgtat ctgcagcac	480
caagaaattt agatcctgg tggaaagcga acgaggagag gagcgttgtt gaaacagat	540
gatgcagaaa gaaaccaga aaaa	564

<210> 35

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 35

agtcgacagt atggaggcgg agccctc

27

<210> 36

<211> 29

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 36

gactagttca aatgttccag gccgggatg

29

<210> 37

<211> 432

<212> PRT

<213> Rat

<400> 37

Met Glu Ala Glu Pro Ser Gln Pro Pro Asn Gly Ser Trp Pro Leu Gly		
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Ser Ser Tyr Tyr Gln His Ser Ser Pro Val Ala Ala Met Phe Ile Ala		
35	40	45
Ala Tyr Val Leu Ile Phe Leu Leu Cys Met Val Gly Asn Thr Leu Val		
50	55	60
Cys Phe Ile Val Leu Lys Asn Arg His Met Arg Thr Val Thr Asn Met		
65	70	75
Phe Ile Leu Asn Leu Ala Val Ser Asp Leu Leu Val Gly Ile Phe Cys		80
85	90	95
Met Pro Thr Thr Leu Val Asp Asn Leu Ile Thr Gly Trp Pro Phe Asp		

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100	105	110
Asn Ala Thr Cys Lys Met Ser Gly	Leu Val Gln Gly Met	Ser Val Ser
115 115	120 120	125 125
Ala Ser Val Phe Thr Leu Val Ala Ile Ala Val	Glu Arg Phe Arg Cys	
130 130	135 135	140 140
Ile Val His Pro Phe Arg Glu Lys Leu Thr	Leu Arg Lys Ala Leu Phe	
145 145	150 150	155 155
Thr Ile Ala Val Ile Trp Ala Leu Ala Leu	Ile Met Cys Pro Ser	
165 165	170 170	175 175
Ala Val Thr Leu Thr Val Thr Arg Glu Glu His His	Phe Met Leu Asp	
180 180	185 185	190 190
Ala Arg Asn Arg Ser Tyr Pro Leu Tyr Ser Cys Trp	Glu Ala Trp Pro	
195 195	200 200	205 205
Glu Lys Gly Met Arg Lys Val Tyr Thr Ala Val	Leu Phe Ala His Ile	
210 210	215 215	220 220
Tyr Leu Val Pro Leu Ala Leu Ile Val Val	Met Tyr Val Arg Ile Ala	
225 225	230 230	235 235
Arg Lys Leu Cys Gln Ala Pro Gly Pro Ala Arg	Asp Thr Glu Glu Ala	
245 245	250 250	255 255
Val Ala Glu Gly Gly Arg Thr Ser Arg Arg Arg	Ala Arg Val Val His	
260 260	265 265	270 270
Met Leu Val Met Val Ala Leu Phe Phe Thr	Leu Ser Trp Leu Pro Leu	
275 275	280 280	285 285
Trp Val Leu Leu Leu Ile Asp Tyr Gly Glu	Leu Ser Glu Leu Gln	
290 290	295 295	300 300
Leu His Leu Leu Ser Val Tyr Ala Phe Pro	Leu Ala His Trp Leu Ala	
305 305	310 310	315 315
Phe Phe His Ser Ser Ala Asn Pro Ile Ile	Tyr Gly Tyr Phe Asn Glu	
325 325	330 330	335 335
Asn Phe Arg Arg Gly Phe Gln Ala Ala Phe	Arg Ala Gln Leu Cys Trp	
340 340	345 345	350 350
Pro Pro Trp Ala Ala His Lys Gln Ala Tyr Ser	Glu Arg Pro Asn Arg	
355 355	360 360	365 365
Leu Leu Arg Arg Arg Val Val Val Asp Val	Gln Pro Ser Asp Ser Gly	
370 370	375 375	380 380
Leu Pro Ser Glu Ser Gly Pro Ser Ser Gly	Val Pro Gly Pro Gly Arg	
385 385	390 390	395 395
Leu Pro Leu Arg Asn Gly Arg Val Ala His	Gln Asp Gly Pro Gly Glu	
405 405	410 410	415 415
Gly Pro Gly Cys Asn His Met Pro Leu Thr Ile	Pro Ala Trp Asn Ile	
420 420	425 425	430 430

<210> 38

<211> 1299

<212> DNA

<213> Rat

<400> 38

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ccgggtgcag	ccatgttcat	cgccgcctac	gtgctcatct	tccctctctg	catgggtggc	180
aacaccctgg	tctgcttcat	tgtgctcaag	aaccggcaca	tgcgactgt	caccaacatg	240
tttatcccta	acctggccgt	cagcgacctg	ctggtgggca	tcttctgcat	gcccacaaacc	300
cttgtggaca	accttatcac	tggttggcct	tggacaacg	ccacatgcaa	gatgagcggc	360
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agttccgct	gcatcgta	ccctttccgc	gagaagctga	cccttcggaa	ggcgctgttc	480
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ttcgcgcaca	tctacctgt	gcccgtggcg	ctcatcgtag	tatgtacgt	gcccgcgc	720
cgcgaagctat	ggcaggcccc	cggtcctcg	cgcgacacgg	aggaggcggt	ggccgagggt	780
ggccgactt	cgccgcgtag	ggcccgctg	gtgcacatgc	tggtcatggt	ggcgctttc	840
ttcacgttgt	cctggctgcc	actctgggtg	ctgctgcgtc	tcatcgacta	tggggagctg	900
agcgagctgc	aactgcaccc	gctgtcggtc	tacgccttcc	ccttggcaca	ctggctggcc	960
ttcttcacca	gcagcgccaa	ccccatcatc	tacggctact	tcaacgagaa	cttccgcgc	1020
ggcttccagg	ctgccttcg	tgcacagctc	tgctggctc	cctggccgc	ccacaagcaa	1080
gcctactcgg	agcgccccaa	ccgcctcctg	cgcaggcggg	tggtggtgga	cgtgcaaccc	1140
agcgactccg	gcctgcacatc	agagtctggc	cccagcagcg	gggtcccagg	gcctggccgg	1200

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ctgccactgc gcaatggcg tgtggccat caggatggcc cgggggaagg gccaggctgc 1260
 aaccacatgc ccctcaccat cccggcctgg aacatttga 1299

<210> 39
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 <212> PRT
 <213> Artificial Sequence

<220>
 <223> the C-terminus of the polypeptide is amide (-CONH2) form

<400> 39
 Met Pro His Ser Phe Ala Asn Leu Pro Leu Arg Phe
 1 5 10

<210> 40
 <211> 8
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> the C-terminus of the polypeptide is amide (-CONH2) form

<400> 40
 Val Pro Asn Leu Pro Gln Arg Phe
 1 5

<210> 41
 <211> 11
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> the C-terminus of the polypeptide is amide (-CONH2) form

<400> 41
 Ser Ala Gly Ala Thr Ala Asn Leu Pro Arg Ser
 1 5 10

<210> 42
 <211> 36
 <212> DNA
 <213> Human

<400> 42
 atgccccact ctttcgccaa cttgccattg agattt 36

<210> 43
 <211> 36
 <212> DNA
 <213> Human

<400> 43
 agtgctggag caacagccaa cctgcctctg agatct 36

<210> 44
 <211> 24
 <212> DNA
 <213> Human

<400> 44
 gttccctaacc tgccccaaag gttt 24

<210> 45
 <211> 276
 <212> DNA
 <213> Human

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<400> 45
atggaaattttcatcaaaactattcattttattgactttagccacttc aagcttgtta 60
acatcaaaca tttttgtgc agatgaattatgtatgtcca atcttcacag caaagaaaat 120
tatgacaaat attctgagcc tagaggataccaaaaggaaagaagcct caattttgag 180
gaattaaaag attggggacc aaaaaatgtt attaagatga gtacacctgc agtcaataaa 240
atgccacact cttcgccaa cttgccatttgaatttggaga ggaacgttca agaagaaaga 276
atgccacact cttcgccaa cttgccatttgaatttggaga ggaacgttca agaagaaaga 276

<210> 46
<211> 336
<212> DNA
<213> Human

<400> 46
atggaaattttcatcaaaactattcattttattgactttagccacttc aagcttgtta 60
acatcaaaca tttttgtgc agatgaattatgtatgtcca atcttcacag caaagaaaat 120
tatgacaaat attctgagcc tagaggataccaaaaggaaagaagcct caattttgag 180
gaattaaaag attggggacc aaaaaatgtt attaagatga gtacacctgc agtcaataaa 240
atgccacact cttcgccaa cttgccatttgaatttggaga ggaacgttca agaagaaaga 300
atgcgtggag caacagccaa cttgcctcttgaatcttggaga ggaacgttca agaagaaaga 336
atgcgtggag caacagccaa cttgcctcttgaatcttggaga ggaacgttca agaagaaaga 336

<210> 47
<211> 393
<212> DNA
<213> Human

<400> 47
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acatcaaaca tttttgtgc agatgaattatgtatgtcca atcttcacag caaagaaaat 120
tatgacaaat attctgagcc tagaggataccaaaaggaaagaagcct caattttgag 180
gaattaaaag attggggacc aaaaaatgtt attaagatga gtacacctgc agtcaataaa 240
atgccacact cttcgccaa cttgccatttgaatttggaga ggaacgttca agaagaaaga 300
atgcgtggag caacagccaa cttgcctcttgaatcttggaga ggaacgttca agaagaaaga 360
atgagacgttgc ttccctaaccttgcatttggaga ggaacgttca agaagaaaga 393
atgagacgttgc ttccctaaccttgcatttggaga ggaacgttca agaagaaaga 393

<210> 48
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 48
ccctgggct tttctgtct tctatgt 27

<210> 49
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 49
agcgattcat tttattgact ttagca 26

<210> 50
<211> 203
<212> PRT
<213> Rat

<400> 50
Met Glu Ile Ile Ser Ser Lys Arg Phe Ile Leu Leu Thr Leu Ala Thr
1 5 10 15
Ser Ser Phe Leu Thr Ser Asn Thr Leu Cys Ser Asp Glu Leu Met Met
20 25 30
Pro His Phe His Ser Lys Glu Gly Tyr Gly Lys Tyr Tyr Gln Leu Arg
35 40 45

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Gly	Ile	Pro	Lys	Gly	Val	Lys	Glu	Arg	Ser	Val	Thr	Phe	Gln	Glu	Leu
50						55				60					
Lys	Asp	Trp	Gly	Ala	Lys	Lys	Asp	Ile	Lys	Met	Ser	Pro	Ala	Pro	Ala
65						70			75				80		
Asn	Lys	Val	Pro	His	Ser	Ala	Ala	Asn	Leu	Pro	Leu	Arg	Phe	Gly	Arg
						85			90				95		
Asn	Ile	Glu	Asp	Arg	Arg	Ser	Pro	Arg	Ala	Arg	Ala	Asn	Met	Glu	Ala
						100		105		110					
Gly	Thr	Met	Ser	His	Phe	Pro	Ser	Leu	Pro	Gln	Arg	Phe	Gly	Arg	Thr
						115		120		125					
Thr	Ala	Arg	Arg	Ile	Thr	Lys	Thr	Leu	Ala	Gly	Leu	Pro	Gln	Lys	Ser
						130		135		140					
Leu	His	Ser	Leu	Ala	Ser	Ser	Glu	Leu	Leu	Tyr	Ala	Met	Thr	Arg	Gln
145						150		155		160					
His	Gln	Glu	Ile	Gln	Ser	Pro	Gly	Gln	Glu	Gln	Pro	Arg	Lys	Arg	Val
						165		170		175					
Phe	Thr	Glu	Thr	Asp	Asp	Ala	Glu	Arg	Lys	Gln	Glu	Lys	Ile	Gly	Asn
						180		185		190					
Leu	Gln	Pro	Val	Leu	Gln	Gly	Ala	Met	Lys	Leu					
						195		200							

<210> 51

<211> 609

<212> DNA

<213> Rat

<400> 51

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acttcaaaca	cccttgttc	a	gatgaatta	a	tatgc	c	ttttcacag	c	aaagaagg	120	
tatggaaaat	attaccagct	g	agaggaatc	c	aaaagg	g	taaggaaag	a	agtgtcact	180	
tttcaagaac	tcaaagat	g	ggggcaa	a	aaagat	a	agatgagtcc	a	gccc	240	
aacaagtgc	cccactc	g	ccaaac	c	ccc	t	ttgggagg	a	catagaagac	300	
agaagaagcc	ccaggc	c	ggccaa	c	gaggc	g	ccatgagcc	t	tttccc	360	
ctgccccaaa	gttttgg	g	aacaac	g	agacg	c	ccaagac	a	ggctgg	420	
ccccagaaat	ccctgc	a	c	tcc	gttgc	t	tctatg	c	gacccg	480	
catcaagaaa	ttagt	t	tggt	c	aatgc	t	ccat	a	ccag	540	
gatgatgcag	aaaggaa	a	agaaaa	a	aac	tt	aa	c	ggaa	600	
											609
atgaagctg											

<210> 52

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 52

ttctagattt	tggacaaaat	ggaaatt	27
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<210> 53

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 53

cgtctttagg	gacaggctcc	agatttc	27
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<210> 54

<211> 430

<212> PRT

<213> Human

<400> 54

Met Glu Gly Glu Pro Ser Gln Pro Pro Asn Ser Ser Trp Pro Leu Ser

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1	5	10	15
Gln Asn Gly Thr Asn Thr Glu Ala Thr Pro Ala Thr Asn Leu Thr Phe			
20	25	30	
Ser Ser Tyr Tyr Gln His Thr Ser Pro Val Ala Ala Met Phe Ile Val			
35	40	45	
Ala Tyr Ala Leu Ile Phe Leu Leu Cys Met Val Gly Asn Thr Leu Val			
50	55	60	
Cys Phe Ile Val Leu Lys Asn Arg His Met His Thr Val Thr Asn Met			
65	70	75	80
Phe Ile Leu Asn Leu Ala Val Ser Asp Leu Leu Val Gly Ile Phe Cys			
85	90	95	
Met Pro Thr Thr Leu Val Asp Asn Leu Ile Thr Gly Trp Pro Phe Asp			
100	105	110	
Asn Ala Thr Cys Lys Met Ser Gly Leu Val Gln Gly Met Ser Val Ser			
115	120	125	
Ala Ser Val Phe Thr Leu Val Ala Ile Ala Val Glu Arg Phe Arg Cys			
130	135	140	
Ile Val His Pro Phe Arg Glu Lys Leu Thr Leu Arg Lys Ala Leu Val			
145	150	155	160
Thr Ile Ala Val Ile Trp Ala Leu Ala Leu Leu Ile Met Cys Pro Ser			
165	170	175	
Ala Val Thr Leu Thr Val Thr Arg Glu Glu His His Phe Met Val Asp			
180	185	190	
Ala Arg Asn Arg Ser Tyr Pro Leu Tyr Ser Cys Trp Glu Ala Trp Pro			
195	200	205	
Glu Lys Gly Met Arg Arg Val Tyr Thr Thr Val Leu Phe Ser His Ile			
210	215	220	
Tyr Leu Ala Pro Leu Ala Leu Ile Val Val Met Tyr Ala Arg Ile Ala			
225	230	235	240
Arg Lys Leu Cys Gln Ala Pro Gly Pro Ala Pro Gly Gly Glu Ala			
245	250	255	
Ala Asp Pro Arg Ala Ser Arg Arg Arg Ala Arg Val Val His Met Leu			
260	265	270	
Val Met Val Ala Leu Phe Phe Thr Leu Ser Trp Leu Pro Leu Trp Ala			
275	280	285	
Leu Leu Leu Leu Ile Asp Tyr Gly Gln Leu Ser Ala Pro Gln Leu His			
290	295	300	
Leu Val Thr Val Tyr Ala Phe Pro Phe Ala His Trp Leu Ala Phe Phe			
305	310	315	320
Asn Ser Ser Ala Asn Pro Ile Ile Tyr Gly Tyr Phe Asn Glu Asn Phe			
325	330	335	
Arg Arg Gly Phe Gln Ala Ala Phe Arg Ala Arg Leu Cys Pro Arg Pro			
340	345	350	
Ser Gly Ser His Lys Glu Ala Tyr Ser Glu Arg Pro Gly Gly Leu Leu			
355	360	365	
His Arg Arg Val Phe Val Val Val Arg Pro Ser Asp Ser Gly Leu Pro			
370	375	380	
Ser Glu Ser Gly Pro Ser Ser Gly Ala Pro Arg Pro Gly Arg Leu Pro			
385	390	395	400
Leu Arg Asn Gly Arg Val Ala His His Gly Leu Pro Arg Glu Gly Pro			
405	410	415	
Gly Cys Ser His Leu Pro Leu Thr Ile Pro Ala Trp Asp Ile			
420	425	430	

<210> 55
<211> 1290
<212> DNA
<213> Human

<400> 55

atggaggggg	agccctcccc	gcctcccaac	agcagttggc	ccctaagtca	gaatgggact	60
aacactggagg	ccaccccggc	tacaaacctc	accttctcct	cctactatca	gcacacctcc	120
cctgtggcgg	ccatgttcat	tgtggcctat	gcgctcatct	tcctgctctg	catgggtggc	180
aacaccctgg	tctgtttcat	cgtgctcaag	aaccggcaca	tgcatactgt	caccaacatg	240
ttcattcctca	acctggctgt	cagtgacactg	ctgggtggca	tcttctgcat	gcccacccacc	300
cttgtggaca	acctcatcac	tgggtggccc	ttcgacaaatg	ccacatgcaa	gatgagcggc	360
ttgggtgcagg	gcatgtctgt	gtcggtttcc	gttttcacac	tggtgccat	tgctgtggaa	420
agttccgct	gcatcgtgca	ccctttccgc	gagaagctga	ccctgcccga	ggcgctcgcc	480

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accatcgccg	tcatctggc	cctggcgctg	ctcatcatgt	gtccctcgcc	cgtcacgctg	540
accgtcaccc	gtgaggagca	ccacttcatg	gtggacgccc	gcaaccgctc	ctaccctctc	600
tactccctgct	gggaggcctg	gccccgagaag	ggcatgcgca	gggtctacac	cacttgctc	660
ttctcgacaca	tctacctggc	gccgctggcg	ctcatcgta	tcatgtacgc	ccgcacatcg	720
cgcaagctct	gccaggcccc	gggcccggcc	cccgggggcg	aggaggctgc	ggaccggcga	780
gcatcgccgc	gcagagcgcg	cgtggtgcac	atgctggtca	tggtggcgct	gttcttcacg	840
ctgtccctggc	tgccgctctg	ggcgctgtcg	ctgctcatcg	actacgggca	gctcagcgcg	900
ccgcagctgc	acctggtcac	cgttacgccc	ttccccctcg	cgcactggct	ggccttcttc	960
aacagcagcg	ccaacccat	catctacggc	tacttcaacg	agaacttccg	ccgcggcttc	1020
caggccgcct	tccgcgcccc	cctctggccg	cgcccgtcgg	ggagccacaa	ggaggcctac	1080
tccgagcggc	ccggcgggct	tctgcacagg	cgggtcttcg	tggtggtgcg	gcccagcgcac	1140
tccgggctgc	cctctgagtc	gggccttagc	agtggggccc	ccaggcccgg	ccgcctcccg	1200
ctgcgaatg	gcccgggtggc	tcaccacggc	ttgcccaggg	aaggggcctgg	ctgctccac	1260
ctgcccctca	ccattccagc	ctggatatac				1290

<210> 56
<211> 1290
<212> DNA
<213> Human

<400> 56

atggaggggg	agccctccca	gcctcccaac	agcagttggc	ccctaagtca	aatgggact	60
aacactgagg	ccaccccgjc	tacaaacctc	accttctcct	cctactatca	gcacacctcc	120
cctgtggcgg	ccatgttcat	tgtggcttat	gcfgtcatct	tccctgtctg	catggtggc	180
aacaccctgg	tctgtttcat	cgtgtctcaag	aaccggcaca	tgcatactgt	caccaacatg	240
ttcatcttc	acctggctgt	cagtgacactg	ctggtggca	tcttctgtcat	gcccaccacc	300
cttgtggaca	acctcatcac	tgggtggccc	ttcgacaatg	ccacatgcac	gatgagcggc	360
tttgtgcagg	gcatgtctgt	gtcggttcc	gttttcacac	tggtggccat	tgctgtggaa	420
aggttccgct	gcatcgtgca	ccctttccgc	gagaagctga	ccctgcggaa	ggcgcgtcgtc	480
accatcgccg	tcatctggc	cctggcgctg	ctcatcatgt	gtccctcgcc	cgtcacgctg	540
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tactcctgt	gggaggccctg	ggccgagaag	ggcatgcgca	gggtctacac	cacttgctc	660
ttctcgacaca	tctacctggc	ggcgctggcg	ctcatcgta	tcatgtacgc	ccgcacatcg	720
cgcaagctct	gccaggcccc	gggcccggcc	cccgggggcg	aggaggctgc	ggaccggcga	780
gcatcgccgc	gcagagcgcg	cgtgtgcac	atgctggtca	tggtggcgct	gttcttcacg	840
ctgtccctggc	tgccgctctg	ggcgctgctg	ctgctcatcg	actacgggca	gctcagcgcg	900
ccgcagctgc	acctggtcac	cgttacgccc	ttccccctcg	cgcactggct	ggccttcttc	960
aacagcagcg	ccaacccat	catctacggc	tacttcaacg	agaacttccg	ccgcggcttc	1020
caggccgcct	tccgcgcccc	cctctggccg	cgcccgtcgg	ggagccacaa	ggaggcctac	1080
tccgagcggc	ccggcgggct	tctgcacagg	cgggtcttcg	tggtggtgcg	gcccagcgcac	1140
tccgggctgc	cctctgagtc	gggccttagc	agtggggccc	ccaggcccgg	ccgcctcccg	1200
ctgcgaatg	gcccgggtggc	tcaccacggc	ttgcccaggg	aaggggcctgg	ctgctccac	1260
ctgcccctca	ccattccagc	ctggatatac				1290

<210> 57
<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 57
gtcgacatgg agggggagcc ctcccagcct c

31

<210> 58
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 58
actagttcag atatcccagg ctggaatgg

29

<210> 59
<211> 58

<212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 59
 tatgagcctg aactttgaag aactgaaaga ttggggtccg aaaaatgtga ttaaaatg 58

<210> 60
 <211> 61
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 60
 agcaccccg cggtgaataa aatgccgcat agcttgcga atctgccgct gcgttttgc 60
 c 61

<210> 61
 <211> 62
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 61
 ggtgctcatt ttaatcacat ttttcggacc ccaatcttc agttcttcaa agttcaggct 60
 ca 62

<210> 62
 <211> 59
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 62
 tcggggcaaa aacgcagcgg cagattcgca aagctatgcg gcattttatt caccgccgg 59

<210> 63
 <211> 20
 <212> PRT
 <213> bovine

<220>
 <221> misc_feature
 <222> (10)..(10)
 <223> Xaa represents an unidentified amino acid residue

<400> 63

Ser	Leu	Thr	Phe	Glu	Glu	Val	Lys	Asp	Xaa	Ala	Pro	Lys	Ile	Lys	Met
1				5				10					15		
Asn	Lys	Pro	Val												
			20												

<210> 64
 <211> 4
 <212> PRT
 <213> Artificial

<220>
 <223> Synthetic peptide

<220>
<221> MOD_RES
<222> (4)..(4)
<223> AMIDATION

<400> 64

Pro Gln Arg Phe
1

<210> 65
<211> 5
<212> PRT
<213> Artificial

<220>
<223> Synthetic peptide

<220>
<221> MOD_RES
<222> (5)..(5)
<223> AMIDATION

<400> 65

Leu Pro Leu Arg Phe
1 5

<210> 66
<211> 4
<212> PRT
<213> Artificial

<220>
<223> Synthetic peptide

<400> 66

Asn Pro Phe Phe
1